Frequently Asked Noise Questions

<u>What is a DNL?</u>

DNL (Day-Night Sound Level) is based on sound levels measured in relative intensity of sound, or decibels (dB), on the "A" weighted scale (dBA). This scale most closely approximates the response characteristics of the human ear to sound. The higher the number on the scale, the louder is the sound. DNL represents noise exposure events over a 24-hour period. To account for human sensitivity to noise between the hours of 10 p.m. and 7 a.m., noise events occurring during these hours receive a "penalty" when the DNL is calculated. Each nighttime event is measured as if ten daytime events occurred.

<u>What is ANOMS?</u>

At FLL, it is the acronym for Airport Noise and Operations Monitoring System. It consists of two elements: nine permanent noise monitoring stations and Passive Secondary Surveillance Radar System (PASSUR) for the purpose of acquiring flight track information.

Data from both the noise monitors and the PASSUR are fed to a central computer located in the Noise Officer's office at the Airport. The integration of these two systems allows the Noise Officer to gather information on the movement of aircraft and noise levels in communities surrounding FLL.

<u>Which is Quieter – An Arrival or Departure?</u>

Arriving aircraft at low altitudes are generally quieter than departures of the same aircraft type because this mode of flight requires much less engine power. However, close to the airport, the relative quietness of an arrival may be offset by the fact that they are typically lower in altitude than departures over the same location.

<u>How are Noise Levels Determined?</u>

To more consistently and easily describe and compare noise environment comprised of numerous single events that vary in duration and magnitude over long periods of time, the U.S. Environmental Protection Agency developed a single number descriptor. This descriptor is the DNL. It is a noise metric which describes an average day/night sound level. The DNL metric is used by the FAA to quantify aircraft noise exposure in the vicinity of an airport. Noise contours of specific DNL levels are developed using the

FAA's Integrated Noise Model (INM). Airport specific data used in the INM model to develop the contour will result in the depiction of noise exposure in the vicinity of an airport. Airport specific data used in the INM include: Average Daily Operations, Aircraft Fleet Mix, Runway Use, Flight Corridors and Usage, Departure Destinations and Day/Night Use.

What are Noise Contours?

Noise contours are a series of line superimposed on a map of the airport's environs. These lines represent various DNL levels (typically 65, 70, and 75 dBA). DNL noise contours are used for several purposes.

- Noise contours highlight existing or potential areas of significant aircraft noise exposure (as defined by the FAA).
- Noise contours are used to assess the relative aircraft noise exposure levels of different runway and/or flight corridor alternatives.
- Noise contours provide guidance to political jurisdictions in the development of land use control measures. These measures include zoning ordinances, subdivision regulations, building codes, and airport overlay zones.

It is the areas within the 65, 70, and 75 DNL noise contours that the FAA considers to be the most impacted by aircraft generated noise. Beyond the 65 DNL noise contour, noise is most noticeable in areas below established flight corridors. You can view the latest noise contour map at http://www.broward.org/images/airport/noisemonitorlocations.jpg.

Who Tells Airplanes Where To Go?

The Federal Aviation Administration (FAA) is the sole organization in the US responsible for the movement of aircraft both on the ground and in the air. All air traffic controllers work for the FAA as part of one national airspace system.

The FAA is also responsible for designing air travel routes and procedures, including the standards for lateral and vertical separation between aircraft and determining hazards to flight such as mountains or tall buildings. An airport may advocate for certain noise abatement flight tracks to reduce noise, but these must be both approved and assigned by the FAA.

Why are Certain Airplanes Lower Than Others?

Aircraft altitude is generally determined by distance from the landing or takeoff runway. The closer the aircraft is to the runway, the lower the altitude. Arrivals tend to descend at a fixed angle of 3 degrees, while the angle of ascent for departures is a function of aircraft type, weight, air temperature, and wind speed.

How are Runways Numbered?

FLL has three runways, a north runway 9L/27R (the primary runway), a south runway 9R/27L (primarily utilized by GA aircraft weighing up to 58,000 lbs), and a cross runway 13/31 (the secondary runway). The north and south runway are parallel to each other and are separated by 3,000 feet. The cross runway connects the north and south runways.

All runways are designed to face the prevailing wind directions, since aircraft must both land and take off into the wind. Runway ends are named according to their compass heading with the last zero dropped. Thus, at FLL the north and south are 09/27 (090 and 270 degrees respectively). The cross runway is 13/31(130 and 310 degrees respectively). As the rules of geometry apply, subtracting one heading from another (270 - 90) leaves 180 degrees or a straight line.

Runway lengths at FLL vary. In some cases a particular aircraft type, usually heavy long-haul international flights, will require the longest available runway for departure. The lengths of runways at FLL are:

- 9L/27R – 9,006’
- 9R/27L – 5,376’
- 13/31 – 6,905’

<u>Why Can’t the Noise Monitors Create a Noise Exposure Contour Map?</u>

The ANOMS Program permanent noise monitors have two best current uses:

1. To review computer model inputs if monitored and modeled noise impacts differ significantly.

2. To quantify the average noise levels attributable to different classes of aircraft. Why not use the monitors to create noise exposure map contours?

There are two reasons. One is that it is difficult to rely on unattended noise monitoring to precisely discriminate between aircraft noise events and other ambient noise sources. The other reason is that even if the monitors could do so with optimal precision, we’d need too many of them to provide the level of detail that the computer model affords.